

AMENDMENTS TO THE CLAIMS

5, 1. (Withdrawn). A digital VTR magnetically recording and replaying video and audio signals at a recording data rate higher than a data rate of a bit stream which is digitally transmitted, recording the bit stream on a magnetic recording medium, by dividing the data for one screen as a baseband video signal, into a plurality of tracks, comprising:

data extracting means for dividing a first low-frequency component data from intra-encoded blocks of the bit stream, into a predetermined number  $L$  ( $L$  being a positive integer not smaller than 2) and extracting the divided low-frequency component, and extracting a second low-frequency component data having frequencies higher than the first low-frequency component data; and

recording means for recording the first low-frequency component data, being divided, in said predetermined number  $L$  of first specific regions respectively disposed in a plurality of tracks into which data for said one screen is divided, and recording said second low-frequency component data in second specific regions disposed in specific tracks of said plurality of tracks, and recording all the bit

stream in the remaining regions in each track, other than said first and second specific regions.

2. (Withdrawn) A digital VTR as set forth in claim 1, further comprising:

selecting means for selecting one of a normal replay and fast replays of a plurality of speeds, by varying the transport speed of the magnetic recording medium;

control means for causing, when the fast replay at a low-speed is selected by said selecting means, the transport speed of the magnetic recording medium to be periodically alternated between a speed near the standard speed for the normal replay and a speed near the speed for the low-speed fast replay; and

replay means for replaying, at the speed near the standard speed, at least the second low-frequency component data recorded in said specific regions from said specific tracks, and the first low-frequency component data recorded in said first specific regions in said specific tracks.

3. (Cancelled).

4. (Cancelled).

5. (Cancelled).

6. (Cancelled).

J 7. (Currently Amended) A digital VTR for magnetically recording and replaying a digitally transmitted bit stream in a predetermined recording format, comprising:

an input means receiving a bit stream, said bit stream including intra coded picture data and inter coded picture data representing encoded transformation coefficients and arranged in transport packets;

data identification means for decoding and identifying header information of the input bit stream;

data extracting means for extracting, from the input bit stream, a series of encoded data of image blocks as fast replay data used for fast replay, based on the decoded header information;

decoding means for decoding the series of coded data of the input bit stream and for outputting a transformation coefficient belonging to the decoded data;

coefficient counting means for counting the number of transformation coefficients; and

data reducing means for receiving the coefficient count number from the coefficient counting means and for controlling the data extracting means in such a way that the data length of the extracted, coded data of an integer number of image blocks is reduced to a data amount which can be recorded in K sync blocks in said predetermined format, wherein K is a positive integer;

*He K*  
*5r*  
division number setting means, responsive to ~~the~~ bit stream input including a predetermined number M of transport packets as a unit, wherein M is an integer, wherein N sync blocks are related to the transport packets such that N is not equal to M, and wherein N is an integer;

division means for dividing M transport packets into N sync blocks to form the recording format;

header appending means for generating a first header for each of the M transport packets and appending the first header to each of the M transport packets;

format forming means for forming N consecutive sync blocks from the data after the division of the bit stream; and

recording means for recording the N consecutive sync blocks as normal reply data;

said recording means recording, as the fast replay data, the extracted, coded data with the data length thereof having been reduced in specific areas for the K sync blocks.

8. (Original) A digital VTR as set forth in claim 7, wherein said encoded data is recorded repeatedly for a number of times about twice the multiplier of the maximum fast replay speed.

9. (Withdrawn) A digital VTR for magnetically recording and replaying a digitally transmitted bit stream, comprising:

I / detecting means for detecting intra-picture data in an input bit stream;

forming means for forming fast replay data from the intra-picture data;

header appending means for appending a first header for discriminating the fast replay data from normal replay data, and a second header for discriminating, within said normal replay data, the intra-picture data and non-intra-picture data from each other, and

recording means for recording the fast replay data together with the normal replay data on a magnetic recording medium.

10. (Withdrawn) A digital VTR as set forth in claim 9, further comprising:

replay means for replaying normal replay data, together with fast replay data from the magnetic recording medium;

separating means for separating the normal replay data, by checking the first header appended to the replay data from the magnetic recording medium;

storage means for storing the intra-picture data, by checking the second header appended to the normal replay data selected by the separating means; and

switching means for selectively outputting the normal replay data or the intra-picture data stored in the storage means, depending on whether the replay mode is the normal replay or the still replay.

11. (Withdrawn) A digital VTR as set forth in claim 9, further comprising:

replay means for replaying normal replay data together with the fast replay data from the magnetic recording medium;

separating means for separating the normal replay data, by checking the first header appended to the replay data from the magnetic recording medium;

storage means for storing the intra-picture data, by checking the second header appended to the normal replay data selected by said separating means; and

switching means for selectively outputting the normal replay data or the intra-picture data stored in the storage means, depending on whether the replay mode is the normal replay or the slow replay.

12. (Withdrawn) A digital VTR as set forth in claim 9, further comprising:

replay means for replaying normal replay data together with the fast replay data from the magnetic recording medium;

separating means for separating the fast replay data from the normal replay data, by checking the first header appended to the replay data from the magnetic recording medium; and

switching means for selectively outputting the normal replay data or the high-speed data, depending on whether the replay mode is the normal replay or the fast replay.

13. (Withdrawn) A digital VTR for magnetically recording and replaying a digitally transmitted bit stream, comprising:

means for forming HP data for fast replay, by extracting low-frequency component from intra-encoded data of an input bit stream;

pattern generating means for forming a recording pattern for recording the HP data, being divided, and a plurality of times, in copy areas respectively set in J tracks ( $J = 12 \times I + 5$ , I being a positive integer) forming one track group; and

recording means for recording in the formats according to the recording patterns, partitioning one track into a main area in which only said bit stream is recorded, and a plurality of copy areas in which said HP data is recorded, being divided;

wherein the recording patterns of the HP data A, B and C recorded, being divided into the N tracks include

a pattern TP1 in which HP data B is recorded in the copy area at the center of the track, and HP data A is recorded in the copy areas at both ends of the track,

a pattern TP2 in which HP data A is recorded in the copy area at the center of the track, and HP data C is recorded in the copy areas at both ends of the track,



a pattern TP3 in which HP data A is recorded in the copy areas at the center and both ends of the track,

a pattern TP4 in which HP data C is recorded in the copy area at the center of the track, and HP data A is recorded in the copy areas at both ends of the track,

a pattern TP5 in which HP data B is recorded in the copy area at the center of the track, and HP data C is recorded in the copy areas at both ends of the track,

and

a pattern TP6 in which HP data B is recorded in the copy areas at the center and both ends of the track, and

in one track group,

a first track of pattern TP4 is disposed in the center of the track group,

a second track of pattern TP1 is disposed at one end of the track group,

a third track of pattern TP6 is disposed at the opposite end of the track group,

tracks of patterns TP2 and TP3 are alternately and repeatedly disposed between the first track and the second track,

tracks of patterns TP5 and TP6 are alternately and repeatedly disposed between the first track and the third track.

14. (Withdrawn) A digital VTR as set forth in claim 13, wherein, in normal replay, the bit stream recorded in the main area is transmitted to a decoder as a replay signal, and, in fast replay, a replay bit stream is formed from the HP data, and transmitted to the decoder as replay HP data.

15. (Withdrawn) A digital VTR as set forth in claim 13, wherein the intra-encoded blocks forming the HP data belong to intra-encoded frame or intra-encoded field.

16. (Withdrawn) A digital VTR for magnetically recording and replaying a digitally transmitted bit stream, comprising:

means for forming HP data for fast replay, by extracting low-frequency component from intra-encoded data of an input bit stream;

pattern generating means for forming a recording pattern for recording the HP data, being divided, and a plurality of times, in copy areas respectively set in J

tracks ( $J = 12 \times I + 5$ ,  $I$  being a positive integer) forming one track group; and

recording means for recording in the formats according to the recording patterns, partitioning one track into a main area in which only said bit stream is recorded, and a plurality of copy areas in which said HP data is recorded, being divided;

wherein the recording patterns of the HP data A, B and C recorded, being divided into the  $N$  tracks include

a pattern TP1 in which HP data B is recorded in the copy area at the center of the track, and HP data A is recorded in the copy areas at both ends of the track,

a pattern TP2 in which HP data A is recorded in the copy area at the center of the track, and HP data B is recorded in the copy areas at both ends of the track,

a pattern TP3 in which HP data A is recorded in the copy areas at the center and both ends of the track,

a pattern TP4 in which HP data A is recorded in the copy area at the center of the track, and HP data C is recorded in the copy areas at both ends of the track,

a pattern TP5 in which HP data C is recorded in the copy area at the center of the track, and HP data A is recorded in the copy areas at both ends of the track,

a pattern TP6 in which HP data C is recorded in the copy areas at the center and both ends of the track,

a pattern TP7 in which HP data C is recorded in the copy area at the center of the track, and HP data B is recorded in the copy areas at both ends of the track,

3 a pattern TP8 in which HP data B is recorded in the copy area at the center of the track, and HP data C is recorded in the copy areas at both ends of the track, and

a pattern TP9 in which HP data B is recorded in the copy areas at the center and both ends of the track, and

in one track group,

a first track of pattern TP5 is disposed in the center of the track group,

second and third tracks of pattern TP6 are disposed on both sides of and adjacent to the first track of pattern TP5,

a fourth track of pattern TP5 is disposed adjacent the second track of pattern TP6,

a fifth track of pattern TP7 is disposed adjacent the third track, and on the opposite side of the fourth track of pattern TP5, with respect to the first track,

a sixth track of pattern TP1 is disposed at the head or tail of the track group, and on the same side of the first track as the fourth track,

a seventh track of pattern TP2 is disposed next to the track of pattern TP1, and on the same side of the first track as the fourth track,

an eighth track of pattern TP9 is disposed at the tail or head of the track group, and on the same side of the first track as the fifth track,

tracks of patterns TP3 and TP4 are alternately and repeatedly disposed between the seventh track and the fourth track,

tracks of patterns TP8 and TP9 are alternately and repeatedly disposed between the eighth track and the fifth track.

17. (Withdrawn) A digital VTR as set forth in claim 16, wherein, in normal replay, the bit stream recorded in the main area is transmitted to a decoder as a replay signal, and, in fast replay, a replay bit stream is formed

from the HP data, and transmitted to the decoder as replay HP data.

18. (Withdrawn) A digital VTR as set forth in claim 16, wherein the intra-encoded blocks forming the HP data belong to intra-encoded frame or intra-encoded field.

19. (Currently Amended) A digital VTR as set forth in claim 7, further comprising:

detecting means for detecting intra-picture data in the input bit stream;

wherein said data extracting means extracts intra-picture data as the ~~forming means for forming fast replay data from the intra-picture data;~~

~~wherein a header appending means appends a first header for discriminating the fast replay data from normal replay data, and a second header for discriminating, within said normal replay data, the intra-picture data and non-intra-picture data from each other; and~~

said recording means records ~~for recording~~ the fast replay data together with the normal replay data on a magnetic recording medium.

20. (Previously Presented) A digital VTR as set forth in claim 19, further comprising:

replay means for replaying normal replay data, together with fast replay data from the magnetic recording medium;

separating means for separating the normal replay data, by checking the first header appended to the replay data from the magnetic recording medium;

storage means for storing the intra-picture data, by checking the second header appended to the normal replay data selected by the separating means; and

switching means for selectively outputting the normal replay data or the intra-picture data stored in the storage means, depending on whether a replay mode is normal replay or still replay.

21. (Previously Presented) A digital VTR as set forth in claim 19, further comprising:

replay means for replaying normal replay data together with the fast replay data from the magnetic recording medium;

separating means for separating the normal replay data, by checking the first header appended to replay data from the magnetic recording medium;

storage means for storing the intra-picture data, by checking the second header appended to the normal replay data selected by said separating means; and

switching means for selectively outputting the normal replay data or the intra-picture data stored in the storage means, depending on whether a replay mode is normal replay or slow replay.

22. (Previously Presented) A digital VTR as set forth in claim 19, further comprising:

replay means for replaying normal replay data together with the fast replay data from the magnetic recording medium;

separating means for separating the fast replay data from the normal replay data, by checking the first header appended to the replay data from the magnetic recording medium; and

switching means for selectively outputting the normal replay data or high-speed data, depending on whether the replay mode is normal replay or fast replay.

23. (Withdrawn) A digital VTR as set forth in claim 6, further comprising:

detecting means for detecting intra-picture data in the input bit stream;



forming means for forming fast replay data from the intra-picture data;

wherein the header appending means appends a first header for discriminating the fast replay data from normal replay data, and a second header for discriminating, within said normal replay data, the intra-picture data and non-intra-picture data from each other; and

recording means for recording the fast replay data together with the normal replay data on a magnetic recording medium.

24. (Withdrawn) A digital VTR as set forth in claim 23, further comprising:

replay means for replaying normal replay data, together with fast replay data from the magnetic recording medium;

separating means for separating the normal replay data, by checking the second header appended to the normal replay data selected by the separating means;

storage means for storing the intra-picture data, by checking the second header appended to the normal replay data selected by the separating means; and

switching means for selectively outputting the normal replay data or the intra-picture data stored in the storage means,

depending on whether a replay mode is normal replay or still replay.

25. (Withdrawn) A digital VTR as set forth in claim 23, further comprising:

replay means for replaying normal replay data together with the fast replay data from the magnetic recording medium;

separating means for separating the normal replay data, by checking the first header appended to replay data from the magnetic recording medium;

storage means for storing the intra-picture data, by checking the second header appended to the normal replay data selected by said separating means; and

switching means for selectively outputting the normal replay data or the intra-picture data stored in the storage means, depending on whether a replay mode is normal replay or slow replay.

26. (Withdrawn) A digital VTR as set forth in claim 23, further comprising:

replay means for replaying normal replay data together with the fast replay data from the magnetic recording medium;

separating means for separating the fast replay data from the normal replay data, by checking the first header appended to the replay data from the magnetic recording medium; and

switching means for selectively outputting the normal replay data or high-speed data, depending on whether the replay mode is normal replay or fast replay.

27. (Canceled).

28. (Currently Amended) A digital VTR for magnetically recording and replaying a digitally transmitted bit stream in a predetermined recording format, comprising:

an input receiving a bit stream, said bit stream including intra coded picture data and inter coded picture data representing encoded transformation coefficients and arranged in transport packets;

a data identifying circuit for decoding and identifying header information of the input bit stream;

a data extraction circuit for extracting, from the input bit stream, a series of encoded data of image blocks as fast replay data used for fast replay, based on the decoded header information;

a decoder for decoding the series of coded data of the input bit stream and for outputting a transformation coefficient belonging to the decoded data;

a coefficient counter for counting the number of transformation coefficients; and

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a data amount control circuit for receiving the coefficient count number from the coefficient counter in such a way that the data length of the extracted, coded data of an integer number of image blocks is reduced to a data amount which can be recorded in K sync blocks in said predetermined format, wherein K is a positive integer;

the K  
an address control circuit, responsive to <sup>the</sup> ~~a said~~ bit stream input including a predetermined number M of transport packets as a unit, wherein M is an integer, wherein N sync blocks are related to the transport packets such that N is not equal to M, and wherein N is an integer;

said address control circuit setting the a division number so that M transport packets are divided into N sync blocks to form the recording format;

a header appending circuit for generating a first header for each of the M transport packets and appending the first header to each of the M transport packets;

a track format circuit for forming N consecutive sync blocks from the data after the division of the bit stream; and

recording means for recording the N consecutive sync blocks as normal replay data;

said recording means recording, as the fast replay data, the extracted, coded data with the data length thereof having been reduced in specific areas for the K sync blocks.

29. (Currently Amended) A digital VTR as set forth in claim 7~~claim 6~~, wherein said header appending means also appends a second header to each of said N sync blocks.

30. (Currently Amended) A digital VTR as set forth in claim 28~~claim 27~~, wherein said header appending circuit also appends a second header to each of said N sync blocks.